PM&E Option Identification Form

It is anticipated that potential PM&E options may be very preliminary at this stage. Please fill out as many sections as possible but, at a minimum, sections 1, 2, and 3. PM&E options may be refined, reviewed and screened over time through Work Group, Plenary and Settlement discussions.

1. Name of Proposed PM&E Option:

a. Name of proposed PM&E option:

Watershed Protection

(BC PM&E #11)

2. Proposed PM&E Option - Please describe and include the following:

a. Describe the proposed PM&E option in as much detail as practical:

The FERC Hydroelectric Project Hand book on pages 91 and 92 states that the final license shall include the "identification of all relevant comprehensive plans and land management plans and discussion of the project's consistency or lack of consistency with each plans. A major item often lacking in submitted applications is the identification and discussion of relevant comprehensive plans". A watershed-based approach will be used to integrate the following plans for the benefit of the licensee and for the enhanced environmental and socio-economic health of the watershed areas that drain to the Lake Oroville facility:

(1) the Army Corps of Engineers, Sacramento and San Joaquin River Basins Comprehensive Study,

(2) the US Forest Service's Sierra Nevada Conservation Framework, which includes the implementation of the 5-year Quincy Library Group forest health pilot project on the Plumas, Lassen and Tahoe National Forests, and

(3) the US Department of Agriculture's and Interior's National Fire Plan.

The Watershed PM&E is designed to reduce the intensity of wildfire and to improve the quality and quantity of useable runoff from the Feather River watershed through thinning of "ladder fuels" such as dense understory vegetation in overstocked forest stands. A 2003 study by the USFS using the "Disturbed WEPP erosion prediction model" concludes that "wildfire is predicted to produce nearly 70 times as much sediment as thinning" under certain conditions. The Oak Ridge National Laboratory conducted a preliminary study of summer water yield effects from implementing the Quincy Library Group forest thinning program. The WRENSS model predicts that seasonal runoff would increase by 3/4 of a percent for west slope forest stands just from reduced evapotranspiration and not including groundwater-related streamflow augmentation.

The Watershed PM&E is also designed to moderate winter flood peaks and to augment summer baseflows by restoring flood plain function to degraded meadows and streams in the Feather River basin. The Feather River Coordinated Resource Management (FRCRM) group has been implementing over 40 stream bank erosion control and meadow re-watering projects since 1985 in the upper Feather River watershed. Project monitoring combined with modeling-based predictions (Bond,1997; Kattlemen,1987) suggest that meadow and stream restoration in combination with upland vegetation management could reduce flood peaks by 5% for the first 24 to 36 hours of a severe winter storm under a specific range of conditions, while enhancing summer flows by 7%. Dr. Romm, an economist at UC Berkley, conducted a cursory survey of the value of environmental services from the Feather River watershed in 1999 and concluded that "in certain conditions, riparian and meadow restoration can actually enhance water storage more efficiently than dam augmentation".

These assessments are promising but not conclusive, as indicated by the April 1996 study by CH2MHill entitled "Reinvestment Opportunities for the Feather River Watershed" and the 1999 study by the Planning and Conservation League Foundation entitled "The Benefits of Watershed Management: Water Quality and Supply -- A Report, Literature Review and Economic Benefits Discussion With an Emphasis on the Sierra Nevada." To move forward with predicting and realizing local and downstream watershed benefits, coordination of watershed modeling, monitoring and project implementation needs to be strengthened.

Strategic and effective cooperation between key local, state and federal agencies having management responsibilities in the basin is needed. Both Butte and Plumas Counties, as area of origin State Water Project Contractors, have initiated actions to advance the Watershed Protection PM&E. Butte County is evaluating DWR's Feather River Watershed Model and other potential modeling tools in cooperation with Dr. Kavvas at UC Davis under a current contract with DWR's Division of Planning and Local Assistance. Plumas County endorsed a grant proposal to CALFED to fund an integrated modeling, monitoring and implementation project for nine miles of meadow re-watering on Last Chance Creek with the FRCRM and Dr. Kavvas. This project is currently underway. The Plumas County Flood Control and Water Conservation District was a party to the 2003 Settlement Agreement that concluded the PCL v DWR litigation on the 1995 Monterey Agreement. The Settlement Agreement includes the establishment of a Watershed Forum to further the goals of the State Water Contractors, including Butte and Plumas Counties. Goals include implementing watershed projects in the Feather River basin that (1) improve retention (storage) of water for augmented base flow in streams; (2) improve water quality (specifically, reduced sedimentation) and streambank protection; (3) improve upland vegetation management and (4) improve groundwater retention/storage in major aquifers.

Butte County has retained Forest Community Research to begin addressing the barriers to watershed investment that were identified in the congressionally funded 1996 Sierra Nevada Ecosystem Project, (discussed in detail in Forest Community Research's book titled Community Forestry in the Unitred States) and which still constrain Butte County's

ability to ameliorate the highest rates of poverty in the Sierra, occurring in the vicinity of Lake Oroville. These barriers include inadequate assessment and valuation of ecosystem benefits and jurisdictional and institutional fragmentation.

Therefore, Butte County requires funding to:

1. Develop a Feather River Watershed Model;
2. Develop watershed models for Butte Creek, Big Chico Creek, Rock Creek and other streams recharging the Butte Groundwater Basin;
3. Cooperate in watershed monitoring programs to improve scientific knowledge;
4. Enhance the application of fuel load reduction, forest thinning practices and salvage of marketable, small diameter timber; and
5. Improve the economy of forest communities through employment in improved management of forest resources.

b. Any physical or operational changes:
1 Yes 0 No 0 Don't know
If Yes, Please explain:

Initial USGS PRMS model runs have indicated a 40% increase in winter runoff and 40% decrease in April-July runoff, due to an increase of temperature of 5 degrees [F or C?] during the 21st Century This magnitude of change in the timing and amount of flows can impact the Oroville operations significantly. During the new license period, the operational conflicts between flood reservation needs and recreation and water supply storage needs in the reservoir will be exacerbated by climate-induced hydrologic variability. Investing in enhanced flood retention in the upper watershed and in better flood forecasting has the potential to reduce conflicts and improve operational flexibility.

c. Proposed start date and duration
Start (month/yr): October 2003 Duration (month(s)/yr(s)): Ongoing

d. Location (within FERC boundary/outside FERC boundary)
0 Inside 1 Outside 0 Don't know
Please specify possible location(s) referring to the linked map, or providing a map as appropriate:

The entire Feather River Watershed within Butte, Plumas and Lassen Counties (map attached).

e. Please provide alternative potential PM&E options for addressing the same resource goal and/or Project 2100 effects referring to the linked map, or providing a map as appropriate: __

1 Unknown

f. Describe the methods for measuring the goals and performance of the PM&E option or methods for evaluating success against the known resource goal(s):

Modeling and monitoring changes in runoff; evaluating the savings from reducing major forest fires; estimating the amount of value added products and jobs created. from watershed rehabilitation activities such as meadow rewatering, vegetative fuels reduction, fish and wildlife habitat enhancements and water quality improvements; and evaluating the effects of these changes on community health and opportunities along with tracking changes in the socio-economic status of impoverished communities in the vicinity of Lake Oroville.

0 Unknown

g. Describe the feasibility of the PM&E option:

The watershed rehabilitation approaches described here have already been tried and are in use in Trinity, Plumas, Yuba and other Northern California Counties. Watershed models have been developed for many western watersheds. Numerous studies have identified two major barriers to sustained watershed investment as: (1) linking watershed scale modeling with project level monitoring and implementation in order to document benefits and justify investments by beneficiaries, and (2) developing the institutional mechanisms and arrangements to facilitate investment partnerships. Butte County is piloting the studies and the institutional relationships that are necessary to address these barriers and to increase the operational flexibility and the multipurpose benefits of the Lake Oroville facility.

0 Unknown

h. Please mark the applicable Working Groups that would be involved in the implementation of this PM&E option:

1 Land Use and Management
1 Recreation & Socioeconomics
0 Cultural Resources
1 Engineering and Operations
1 Environmental

3. Contact Information for Submitter(s) & Alternate Contact:

a. Organization name: Department of Water & Resource Conservation

b. Preparer's name, phone number and e-mail address: Ed Craddock, 530-538-3804, ecraddock@buttecounty.net and Leah Wills, 530-284-7294, lwills@fcresearch.org

c. Secondary contact person, phone number and e-mail address: Dave McClain, 530-538-7621, dmcclain@buttecounty.net

d. Date prepared: August 6, 2003

e. Organization(s) represented by submitter: Butte County

- - - - - - - **Please fill out the following questions to the best of your ability** - - - - - - -

4. Resource Goals:

a. Identify and describe the resource goal the PM&E option is related to, providing reference to the resource goal number(s) described, as appropriate: __

0 I don't know

b. Explanation of how the PM&E option furthers that goal: __

0 I don't know

5. Identify the Resource Issue/Relationship to Project and Relicensing

a. Describe the issue the PM&E option is intended to address, referring as appropriate to Issue Statement(s) number(s): __

0 Unknown

b. Describe the relationship between the PM&E option and the project, including any project impacts the PM&E option is intended to address:

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0 Unknown

c. Identify any comprehensive plans that this PM&E option is related to:__

0 Unknown